

In re Appl. No. 09/034,336

Claim 6, line 2, deleted "substance" (both occurrences).

✓ Claim 9, line 3, delete "substance".

REMARKS

Claims 5-6, 9-10, and 27-30 are rejected under 35 U.S.C. 10(a) as being unpatentable over Maruta et al.

This rejection is respectfully traversed. The claims have now been amended to recite that the method claimed is for inhibiting the decrease of naturally occurring active oxygen eliminating activity in a plant when the plant is sliced, disrupted, or an edible part of the plant is disrupted. It is believed that this language more clearly expresses what is the invention for which patent protection is sought. Support for this can be found in the specification as filed in the background of the invention as well as in the Summary of the Invention on page 3, first full paragraph.

Oxidizing agents such as superoxide and its derivatives, including the hydroxy radical and hydrogen peroxide, are known to oxidize intracellular target molecules such as membrane lipids, proteins, and DNA, thereby inducing oxygen-related defects, including causing ageing of living bodies, and related diseases. Living cells contain enzymes which can eliminate such active oxygen compounds, such as superoxide dismutates and catalase, as well as antioxidants such as L-ascorbic acid and alpha-tocopherol, which generally

In re Appl. No. 09/034,336

maintain the concentration of intracellular active oxygen at a relatively low level. However, when an organism is subjected to irradiation from a relatively large amount of ultraviolet light, radiations, and magnetic waves, excessive physical exercise, or aggravated mental stress, additional active oxygen is produced in the organism, which is in excess of that which can be eliminated by naturally occurring antioxidants and enzymes in the organism and thus oxidative damage can occur.

As is now well known, many plants (e.g., fruits and vegetables) have been found to be capable of eliminating the effects of oxidizing agents such as superoxide and its derivatives, because of their naturally occurring active oxygen eliminating ability. However, when plants are processed, such as by cutting, heating, extracting, juicing, and drying, as well as subjected to long periods of storage prior to being ingested, the inherent active oxygen eliminating ability of the plants may be diminished or even extinguished completely (cf. specification as filed, page 3, lines 1-5).

The present invention provides a method for retaining this naturally occurring oxygen eliminating ability of plants by adding to a plant substance an effective amount of a trehalose. Maruta, on the other hand, adds saccharide compositions containing trehalose to a variety of foods. As

In re Appl. No. 09/034,336

disclosed in Maruta at column 12, lines 20-34, trehalose is a stable sweetener, ... and has properties such as osmotic pressure-controlling ability, gloss-imparting ability, moisture-retaining ability, viscosity-imparting ability, substantially no fermentability, ability to prevent retrogradation of gelatinized starch, and the ability to prevent crystallization of other saccharides. Thus, the present trehalose and saccharide composition containing the same can be arbitrarily used as a sweetener, taste-improving agent, quality-improving agent, stabilizer and filler in a variety of compositions such as food products, cigarettes, tobaccos, feeds, cosmetic, and pharmaceuticals.

At column 13, line 65 through column 14, line 28, Maruta et al. disclose that the trehalose and saccharide compositions containing the same can be used as a quality-improving agent and stabilizer for biologically active substances susceptible to loss of their effective ingredients, and activities, as well as in health foods and pharmaceutical compositions containing biologically active substances. The examples give of biologically active substances are lymphokines, hormones, biological preparations such as vaccines, antibiotics, vitamins, enzymes, extracts such as ginseng extract, snapping turtle extract, viable microorganisms, and other biologically active substances such as royal jelly. There is absolutely no indication that the

In re Appl. No. 09/034,336

trehalose stabilizes naturally occurring active oxygen eliminating activities of these substances, as most of these substances are not known to have such active oxygen eliminating activity. Moreover, it should be noted that Maruta et al. define the activities of trehalose in column 12 as controlling osmotic pressure, acting as a filler, imparting gloss, retaining moisture, imparting viscosity, preventing retrogradation of gelatinized starch, and prevention of crystallization of other saccharides. Thus, one skilled in the art would have no reason to believe that adding a trehalose to a plant that has been processed such that the active oxygen eliminating activity (from whatever source) has been adversely affected by such processing would inhibit the decrease of this active oxygen eliminating ability.

It is very clear that the present invention has nothing to do with adding trehalose to a biologically active substance such as listed in Maruta et al. at column 14, which biologically active substances are merely ingredients of foods and pharmaceutical compositions. Rather, the present invention provides a method to retain the naturally occurring active oxygen eliminating activity of plants when these plants are subjected to processing that may diminish this naturally occurring active oxygen eliminating ability.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and

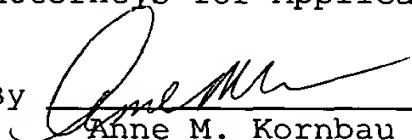
In re Appl. No. 09/034,336

favorable action thereon is earnestly solicited.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant(s)

By



Anne M. Kornbau
Registration No. 25,884

Telephone No.: (202) 628-5197

Facsimile No.: (202) 737-3528

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